

PHILIP MORRIS U. S. A.  
INTER-OFFICE CORRESPONDENCE  
RICHMOND, VIRGINIA

*File  
FTC  
Market # 25*

To: • Mr. J. E. Wickham Date: December 23, 1981  
From: • C. C. Bright  
Subject: • Comparison of CO Deliveries for Domestic Cigarette Brands  
Between Philip Morris, Tobacco Institute Testing Laboratory,  
And Federal Trade Commission Laboratory

The FTC "Report of Tar, Nicotine and Carbon Monoxide of Smoke of 200 Varieties of Cigarettes" issued December, 1981, is compared for carbon monoxide (CO) data with Philip Morris and TITL data for these cigarette brands. CO data for FTC is in good agreement with Philip Morris and TITL data. The FTC samples were obtained from 50 geographical locations during March and April, 1981. The Philip Morris data are based on the four month running averages as reported in April, 1981.

The deviations observed among the laboratories for CO deliveries is within the normal cigarette to cigarette variation. The overall average difference between Philip Morris and FTC is +0.3 mg/cigt. for CO delivery as compared to -0.1 mg/cigt. difference between the TITL and FTC. The average difference between TITL and FTC for CO delivery was +0.4 mg/cigt. A total of 179 comparisons were made for CO deliveries between Philip Morris and FTC. Of these, 54 brands showed a lower CO delivery for PM data compared to FTC data; 118 brands showed a higher CO delivery for PM compared to FTC; 7 brands showed no differences in CO delivery between the two laboratories. Among these 179 brands, 28 brands had a difference equal to or greater than 1.0 mg in CO delivery between PM and FTC. These larger differences between the laboratories are attributed to sampling and the ability of the Philip Morris laboratory to detect brand modifications.

The individual brand comparisons for CO deliveries are listed alphabetically by company in Tables I-VI. At the bottom of each table, the overall average CO deliveries for that company are compared. Table VII shows the average differences observed between the laboratories by CO delivery range. Table VIII compares the average differences between the laboratories for each company.

CCB:rrs

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Attachments

PM3001060708

TABLE I  
PHILIP MORRIS

CO, mg/cigt.

	Philip Morris Data April, 1981	FTC Report Dec., 81	Market Sample #25 TITL Market Sample #25
<u>FILTERED</u>			
Alpine 85	13.2	13.4	13.7
Benson & Hedges 70	1.3	1.2	1.4
Benson & Hedges 85	12.6	12.3	12.6
Benson & Hedges 100 (Box)	16.1	15.6	16.0
Benson & Hedges Menthol 100 (Box)	15.7	15.0	16.1
Benson & Hedges 100 (Soft Pack)	16.8	16.3	16.5
Benson & Hedges Menthol 100 (Soft Pack)	17.1	16.6	16.5
Benson & Hedges Lights 100 (Box)	12.4	11.3	11.9
Benson & Hedges Lights Menthol 100 (Box)	11.1	10.6	11.6
Benson & Hedges Lights 100 (Soft Pack)	12.7	12.9	13.3
Benson & Hedges Lights Menthol 100 (Soft Pack)	12.4	11.9	12.4
Benson & Hedges Multifilter 85	11.4	11.3	11.6
Benson & Hedges Multifilter Menthol 85	10.2	10.7	10.7
Cambridge 85 (Box)	<0.4	**	0.2
Cambridge 85 (Soft Pack)	0.9	1.1	1.4
Cambridge 100	4.9	4.8	5.3
Galaxy 85	14.7	13.4	14.5
Hi-Lite International 100 (Box)	12.7	13.1	14.1
Marlboro 80 (Box)	15.1	14.5	15.2
Marlboro Menthol 80 (Box)	14.4	13.7	13.8
Marlboro 85	16.0	15.2	15.5
Marlboro Menthol 85	13.4	13.5	14.0
Marlboro 100 (Box)	17.1	16.0	16.5
Marlboro 100 (Soft Pack)	16.3	16.2	16.6
Marlboro Lights 85 (Box)	12.2	11.9	12.2
Marlboro Lights 85 (Soft Pack)	12.3	12.4	12.8
Marlboro Lights 100	13.4	12.4	12.8
Merit 85	10.5	10.4	10.1
Merit Menthol 85	10.2	9.7	9.6
Merit 100	12.2	12.2	12.0
Merit Menthol 100	11.8	11.5	11.6
Merit Ultra Lights 85	4.5	3.8	4.3
Merit Ultra Lights Menthol 85	4.3	3.6	3.9
Parliament Lights 80 (Box)	9.8	10.3	10.1
Parliament Lights 85	11.0	10.2	10.4
Parliament Lights 100	11.1	11.2	11.5
Philip Morris International 100	15.9	15.7	15.8
Philip Morris International Menthol 100	15.9	15.1	15.5
Saratoga 120	15.5	16.0	16.4
Saratoga Menthol 120	15.8	15.6	16.1
Virginia Slims 100	15.0	15.1	15.3
Virginia Slims Menthol 100	15.2	14.2	14.5
Virginia Slims Lights 100 (Box)	8.8	8.3	8.7
Virginia Slims Lights Menthol 100 (Box)	9.3	8.0	7.9
<u>NON-FILTERED</u>			
English Ovals 70 (NF)	12.6	11.9	12.2
English Ovals 85 (NF)	14.7	14.5	14.6
Philip Morris 70 (NF)	12.8	12.3	12.0
Philip Morris Commander 85 (NF)	17.0	15.2	14.9
Players Navy Cut 70 (NF)	N.A. <sup>1</sup>	14.1	13.8
OVERALL CO. AVERAGE	12.1	12.1	11.8

<sup>1</sup>There is insufficient data with sleeving to report CO delivery.

\*\*Below the sensitivity of the method used by FTC.

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TABLE II  
R. J. REYNOLDS

<u>Brand</u>	<u>CO, mg/cigt.</u>		
	<u>Philip Morris Data April, 1981</u>	<u>FTC Report Dec., 81</u>	<u>TITL Market Sample #25</u>
<u>FILTERED</u>			
Camel 85	14.4 <sup>1</sup>	16.0	15.6
Camel Lights 80 (Box)	7.7	6.6	7.2
Camel Lights 85 (Soft Pack)	11.0	10.1	10.8
Camel Lights 100	14.6	14.5	14.8
Doral II 85	4.2	3.2	3.6
Doral II Menthol 85	3.0	3.5	3.6
More 120	20.4 <sup>2</sup>	20.4	21.0
More Menthol 120	20.0 <sup>2</sup>	19.7	21.6
Now 80 (Box)	<0.4	**	N.A.
Now 85 (Box)	<0.4	N.A.	0.5
Now 85 (Soft Pack)	2.4	2.8	3.3
Now Menthol 85 (Soft Pack)	2.6	2.5	3.0
Now 100 (Box)	<0.4	**	0.1
Now 100 (Soft Pack)	1.0	1.2	1.6
Now Menthol 100 (Soft Pack)	1.5	1.3	1.8
Salem 85	14.0	13.6	14.0
Salem 100	14.0	13.6	13.8
Salem Lights 85	11.8	9.6	10.3
Salem Light 100	12.0	11.2	11.8
Salem Ultra 85	4.8	3.8	4.4
Salem Ultra 100	6.8	5.3	6.1
Vantage 85	12.8	12.5	12.8
Vantage Menthol 85	13.0	14.3	14.2
Vantage 100	11.7	12.2	12.1
Vantage Ultra Lights 85	9.4	9.0	9.3
Vantage Ultra Lights 100	7.9	7.9	8.0
Winston 80	15.8	15.0	15.7
Winston 85	16.2	15.5	16.4
Winston 100	16.8	14.3	15.1
Winston Lights 85	10.8	11.0	11.5
Winston Light 100	15.4	14.4	15.0
Winston Ultra 85	5.2	4.9	5.4
Winston Ultra 100	7.0	7.1	6.8
Winston International 100	N.A.	16.3	16.9

NON-FILTERED

Camel 70 (NF)	<u>12.2</u>	<u>12.5</u>	<u>12.7</u>
OVERALL CO AVERAGE	9.5	10.2	10.0

<sup>1</sup>Dilution was added in April, 1980 resulting in a lower CO delivery (17 to 14 mg).

<sup>2</sup>The porosity and tipping paper length was increased in January, 1981. lowering the CO delivery (23 to 20 mg) for both More 120 and More Menthol 120.

\*\*Below the sensitivity of the method used by FTC.

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TABLE III

LORILLARD

<u>Brand</u>	<u>CO, mg/cigt.</u>		
	Philip Morris Data April, 1981	FTC Report Dec., 81	TITL Market Sample #25
<u>FILTERED</u>			
Golden Lights 85	8.5	8.1	8.2
Golden Lights Menthol 85	7.8	8.0	8.7
Golden Lights 100	9.0	8.9	8.5
Golden Lights Menthol 100	7.6	6.9	6.6
Kent 80	12.4	12.2	12.7
Kent 85	12.7	12.6	13.0
Kent 100	13.9	13.5	13.8
Kent Menthol 100	14.1	13.6	13.8
Kent III 85	3.1	2.9	3.4
Kent III 100	7.3	6.6	7.0
Max 120	17.4	17.6	18.0
Max Menthol 120	17.0	17.8	17.4
Newport Menthol 80	16.4	16.1	16.3
Newport Menthol 85	18.7	18.0	18.6
Newport Menthol 100	20.3	19.6	20.2
Newport Lights Menthol 80	11.0	9.8	10.2
Newport Lights Menthol 85	9.3	9.6	10.0
Old Gold 85	19.0	18.7	18.9
Old Gold 100	19.6	20.3	20.9
Old Gold Lights 85	10.2	10.5	10.5
Spring 100	17.4	17.6	18.1
Triumph 85	3.6	3.0	3.6
Triumph Menthol 85	3.3	2.5	3.1
Triumph 100	5.4	6.0	6.6
Triumph Menthol 100	5.0	5.3	5.8
True 85	5.5	4.9	5.4
True Menthol 85	5.2	5.1	5.2
True 100	9.5	8.7	9.8
True Menthol 100	9.4	9.1	9.3
True Ultra One 85	1.0	1.1	1.5
<u>NON-FILTERED</u>			
Old Gold Straights 85 (NF)	<u>16.1</u>	<u>17.1</u>	<u>17.2</u>
OVERALL CO AVERAGE	10.9	11.0	11.0

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TABLE IV  
BROWN & WILLIAMSON

<u>Brand</u>	<u>CO, mg/cigt.</u>		
	<u>Philip Morris Data April, 1981</u>	<u>FTC Report Dec., 81</u>	<u>TITL Market Sample #25</u>
<u>FILTERED</u>			
Arctic Lights 85	9.5	8.5	9.5
Arctic Lights 100	9.5	9.2	10.3
Barclay 80 (Box)	1.0	1.0	1.3
Barclay 85	1.2	1.1	1.2
Barclay 100	2.0	2.2	2.9
Belair 85	9.8	9.1	9.7
Belair 100	11.2	10.1	10.8
DuMaurier 85	16.2	17.0	17.1
Kool 80	16.2	16.3	16.3
Kool 85	17.5	16.5	16.8
Kool 100	16.4	N.A.	16.2
Kool Milds 85	11.7	12.3	12.8
Kool Milds 100	13.3	12.8	13.3
Kool Super Lights 85	7.2	6.9	7.6
Kool Super Lights 100	12.2	12.1	12.1
Raleigh 85	16.6	17.2	17.5
Raleigh 100	17.8	16.7	17.1
Raleigh Lights 85	10.7	10.6	10.7
Raleigh Lights 100	14.4 <sup>1</sup>	12.7	12.5
Viceroy 85	16.0	16.0	16.6
Viceroy 100	16.8	16.3	16.6
Viceroy Rich Lights 85	10.2	9.8	10.3
Viceroy Rich Lights 100	10.6	11.6	12.5
<u>NON-FILTERED</u>			
Kool 70 (NF)	14.2	14.4	14.6
Raleigh 85 (NF)	<u>17.0</u>	<u>16.9</u>	<u>17.1</u>
OVERALL CO AVERAGE	12.0	11.6	12.1

<sup>1</sup>Raleigh Lights 100 decreased filter dilution in February, 1981 increasing CO delivery (11 to 14 mg).

TABLE V  
AMERICAN BRANDS

	<u>CO, mg/cigt.</u>		
<u>Brand</u>	<u>Philip Morris Data April, 1981</u>	<u>FTC Report Dec., 81</u>	<u>TITL Market Sample #25</u>
<u>FILTERED</u>			
American Lights 120	8.9	8.5	8.9
American Lights Menthol 120	8.5	8.4	8.6
Bull Durham 85	24.8	23.8	24.7
Carlton 85 (Box)	<0.4	**	0.1
Carlton 85 (Soft Pack)	1.4	1.3	1.8
Carlton Menthol 85	0.7	0.8	1.1
Carlton 100 (Box)	0.6	0.6	0.9
Carlton Menthol 100 (Box)	N.A.	N.A.	1.1
Carlton 100 (Soft Pack)	5.8	5.6	5.7
Carlton Menthol 100 (Soft Pack)	5.4	4.4	4.9
Carlton 120	5.5	N.A.	4.8
Carlton Menthol 120	4.1	N.A.	4.9
Half & Half 85	15.4	14.6	15.6
Iceberg Menthol 100	4.3	3.6	3.9
Long Johns 120	18.6	18.5	19.3
Long Johns Menthol 120	17.0	16.7	16.8
Lucky Ten 85	9.3	9.3	10.3
Lucky 100	4.8	4.5	4.9
Montclair 85	15.2	15.9	16.0
Pall Mall 85	17.9	18.1	18.1
Pall Mall 100	18.0	17.2	17.5
Pall Mall Extra Light 85	7.0	6.4	6.7
Pall Mall Light 100	8.0 <sup>1</sup>	8.7	9.2
Pall Mall Light Menthol 100	11.6	12.0	12.2
Silva Thins 100	10.5	9.3	9.8
Silva Thins Menthol 100	10.3	9.2	10.2
Tall 120	18.5	18.6	19.4
Tall Menthol 120	16.1	17.1	17.5
Tareyton 85	16.0	15.3	16.1
Tareyton 100	16.0	16.2	16.5
Tareyton Lights 85	5.3	5.3	5.6
Tareyton Long Lights 100	7.2	7.1	7.6
Tareyton Ultra Low Tar Menthol 85	1.0	0.8	1.6
<u>NON-FILTERED</u>			
Herbert Tareyton 85 (NF)	18.9	19.4	19.5
Lucky Strike 70 (NF)	16.6	17.0	17.5
Pall Mall 85 (NF)	17.0	16.7	16.4
OVERALL CO AVERAGE	10.5	11.0	10.4

<sup>1</sup>Dilution was added in December, 1980, resulting in lower CO delivery (10 to 8 mg).

\*\*Below the sensitivity of the method used by FTC.

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TABLE VI  
LIGGETT GROUP

<u>Brand</u>	<u>CO, mg/cigt.</u>		
	<u>Philip Morris Data April, 1981</u>	<u>FTC Report Dec., 81</u>	<u>TITLE Market Sample #25</u>
<u>FILTERED</u>			
Chesterfield 85	14.7	15.1	14.8
Chesterfield 100	16.6	16.3	16.5
Decade 85	5.2	4.4	4.7
Decade Menthol 85	5.4 <sup>1</sup>	4.2	4.4
Decade 100	N.A.	7.3	7.5
Eve 100	15.2	14.4	15.1
Eve Menthol 100	15.1	14.5	14.5
Eve Lights 120	12.4	12.6	13.2
Eve Lights Menthol 120	12.3	12.3	14.3
L & M 80 (Box)	14.3	14.5	14.5
L & M 85	14.6	14.8	15.2
L & M 100	15.7	15.6	16.4
L & M Flavor Lights 85	7.8 <sup>2</sup>	6.5	6.7
L & M Long Lights 100	6.8	5.6	6.4
L & M Long Lights Menthol 100	6.8	5.7	6.4
Lark 85	12.8 <sup>3</sup>	14.0	14.2
Lark 100	14.6 <sup>3</sup>	15.0	15.9
Lark Lights 85	6.9	7.4	7.8
Lark Lights 100	6.9	7.1	7.3
Oasis 85	15.0	14.9	15.3
St. Moritz 100	14.1	13.4	14.0
St. Moritz Menthol 100	13.8	14.3	15.1
<u>NON-FILTERED</u>			
Chesterfield 70 (NF)	12.2	13.2	13.1
Chesterfield 85 (NF)	15.4	16.1	16.0
Picayune 70 (NF)	N.A.	15.0	14.9
OVERALL CO AVERAGE	11.9	11.8	12.2

<sup>1</sup>Dilution was decreased in September, 1980, resulting in increased CO delivery (3 to 6 mg).

<sup>2</sup>Dilution was decreased in September, 1980, resulting in increased CO delivery (5 to 8 mg).

<sup>3</sup>Lark 85 and 100 changed to a more porous cigarette paper and decreased tobacco weight in June, 1980, resulting in lower CO deliveries (16 to 13 mg and 17 to 15 mg respectively).

TABLE VII  
COMPARISON OF DIFFERENCES BETWEEN  
LABORATORIES BY CO DELIVERY RANGE

<u>CO Delivery Range,</u> <u>mg/cigt.</u>	<u>Avg. Diff.,</u> <u>PM-FTC</u>	<u>Avg. Diff.,</u> <u>PM-TITL</u>	<u>Avg. Diff.,</u> <u>TITL-FTC</u>
<u>≥0.4-5.0<sup>1</sup></u>	+0.2 (N=26)	-0.3 (N=27)	+0.4 (N=27)
5.1-10.0	+0.4 (N=37)	0.0 (N=38)	+0.4 (N=40)
10.1-15.0	+0.2 (N=62)	-0.2 (N=62)	+0.3 (N=67)
15.1-20.0	+0.3 (N=52)	-0.1 (N=53)	+0.4 (N=54)
20.1-Up	+0.8 (N=2)	+0.1 (N=2)	+0.8 (N=3)
OVERALL AVERAGE =	+0.3 (N=179)	-0.1 (N=182)	+0.4 (N=191)

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TABLE VIII  
COMPARISON OF DIFFERENCES BETWEEN  
LABORATORIES BY COMPANY

<u>Average CO Difference Observed (mg/cigt.)</u>			
<u>COMPANY</u>	<u>PM-FTC</u>	<u>PM-TITL</u>	<u>TITL-FTC</u>
<u>Philip Morris Brands</u>			
Filtered	+0.4	0.0	+0.3
Non-Filtered	+0.8	+0.8	-0.1
<u>R.J. Reynolds Brands</u>			
Filtered	+0.5	+0.1	+0.4
Non-Filtered	-0.3	-0.5	+0.2
<u>Lorillard Brands</u>			
Filtered	+0.2	-0.1	+0.3
Non-Filtered	-1.0	-1.1	+0.1
<u>Brown &amp; Williamson</u>			
Filtered	+0.3	-0.2	+0.4
Non-Filtered	0.0	-0.2	+0.2
<u>American Brands</u>			
Filtered	+0.3	-0.2	+0.5
Non-Filtered	-0.2	-0.3	+0.1
<u>Liggett Group</u>			
Filtered	+0.2	-0.3	+0.5
Non-Filtered	-0.9	-0.8	-0.1

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